

## ABSTRACT OF THE DISCLOSURE

79 Multiple electrode contacts make electrical connections to the anterior and/or posterior chest for multi-variate characterization of the electrical activation of the heart. A central processing unit derives synthetic composite electrographic signals as well as flag signals for specific purposes. A preferred embodiment uses this system to trigger or gate magnetic resonance imaging, eliminating or reducing problems from small or inverted R-waves, lead detachment, noise, flow signal, gradient changes, and rhythm changes, more reliably flagging the onset of electrical activation of the ventricles. Additional derived data are ST-segment shifts, filling times, and respiratory cycle. Filling times may be used for greatly improved imaging in the presence of rhythm disturbances, such as atrial fibrillation. Respiratory cycle may be used as a respiratory trigger to control for the effects of breathing on the heart position and image quality.

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